

- 1 1. A method comprising:
2 forming a phase change material and an electrode
3 in a pore in an insulator such that said phase change
4 material fills less of said pore than the electrode.
- 1 2. The method of claim 1 including forming the phase
2 change material so that the phase change material fills
3 less than 25 percent of the pore.
- 1 3. The method of claim 2 including forming the phase
2 change material so that the phase change material fills
3 about 10 percent or less of the pore.
- 1 4. The method of claim 1 including forming a
2 chalcogenide phase change material.
- 1 5. The method of claim 1 including forming an
2 electrode that acts as a heater for said phase change
3 material.
- 1 6. The method of claim 1 including forming the pore
2 in an insulator, and filling the pore with material to form
3 the electrode.
- 1 7. The method of claim 6 including etching a portion
2 of the electrode material from the pore.

1 8. The method of claim 7 including using an etchant
2 that is highly selective to the material of the electrode
3 relative to the material of the insulator.

1 9. The method of claim 1 including filling said pore
2 with a material to form said electrode and then planarizing
3 the insulator and electrode material.

1 10. The method of claim 1 including coupling said
2 electrode to a select device.

1 11. A memory comprising:
2 an insulator over a substrate, said insulator
3 including a pore having an electrode over the substrate and
4 a phase change material over the electrode, wherein the
5 phase change material fills less of the pore than the
6 electrode.

1 12. The memory of claim 11 wherein said phase change
2 material fills less than 25 percent of the pore.

1 13. The memory of claim 11 wherein said phase change
2 material fills about 10 percent or less of the pore.

1 14. The memory of claim 11 wherein said phase change
2 material is entirely contained within the pore.

1 15. The memory of claim 11 wherein said phase change
2 material is a chalcogenide.

1 16. The memory of claim 11, said electrode to act as
2 a heater to heat said phase change material.

1 17. The memory of claim 11 wherein the phase change
2 material is substantially co-planar with the upper surface
3 of said insulator.

1 18. The memory of claim 11 including a select device
2 coupled to said electrode.

1 19. The memory of claim 11 including a conductive
2 line formed over said insulator and said phase change
3 material.

1 20. The memory of claim 19 wherein said phase change
2 material is in contact with said conductive line.

1 21. The memory of claim 19 wherein said conductive
2 line and the upper surface of said electrode are
3 substantially parallel.

1 22. A system comprising:
2 a processor-based device;
3 a wireless interface coupled to said processor-
4 based device; and
5 a semiconductor memory coupled to said device,
6 said memory including an insulator over a substrate, said
7 insulator including a pore having an electrode over the
8 substrate and a phase change material over the electrode
9 wherein the phase change material fills less of the pore
10 than the electrode.

1 23. The system of claim 22 wherein said phase change
2 material fills less than 25 percent of the pore.

1 24. The system of claim 22 wherein said phase change
2 material fills about 10 percent or less of the pore.

1 25. A memory comprising:
2 an insulator over a substrate, said insulator
3 including a pore having an electrode over the substrate and
4 a phase change material over the electrode, wherein the
5 phase change material is less than 25 percent of the height
6 of the pore.

1 26. The memory of claim 25 wherein said phase change
2 material is about 10 percent or less of the height of the
3 pore.

1 27. The memory of claim 26 wherein said phase change
2 material fills less of the pore than the electrode.

1 28. The memory of claim 27 wherein said phase change
2 material fills about 10 percent or less of the pore.

1 29. The memory of claim 25 wherein said phase change
2 material is entirely contained within the pore.

1 30. The memory of claim 29 including a conductive
2 line over said phase change material wherein said
3 conductive line and the upper surface of said electrode are
4 substantially parallel.

1 31. An apparatus comprising:
2 a damascene structure, wherein the damascene
3 structure includes a first electrode over a substrate and a
4 phase change material over the first electrode; and
5 a second electrode over the damascene structure.

1 32. The apparatus of claim 31 wherein the damascene
2 structure further comprises an insulator having a pore over
3 the substrate, wherein the first electrode and the phase
4 change material are formed in the pore.